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## MEMORANDUM

TO: Carol Stein, RPM

FROM: Robert M. Alvey, P.G. Geologist

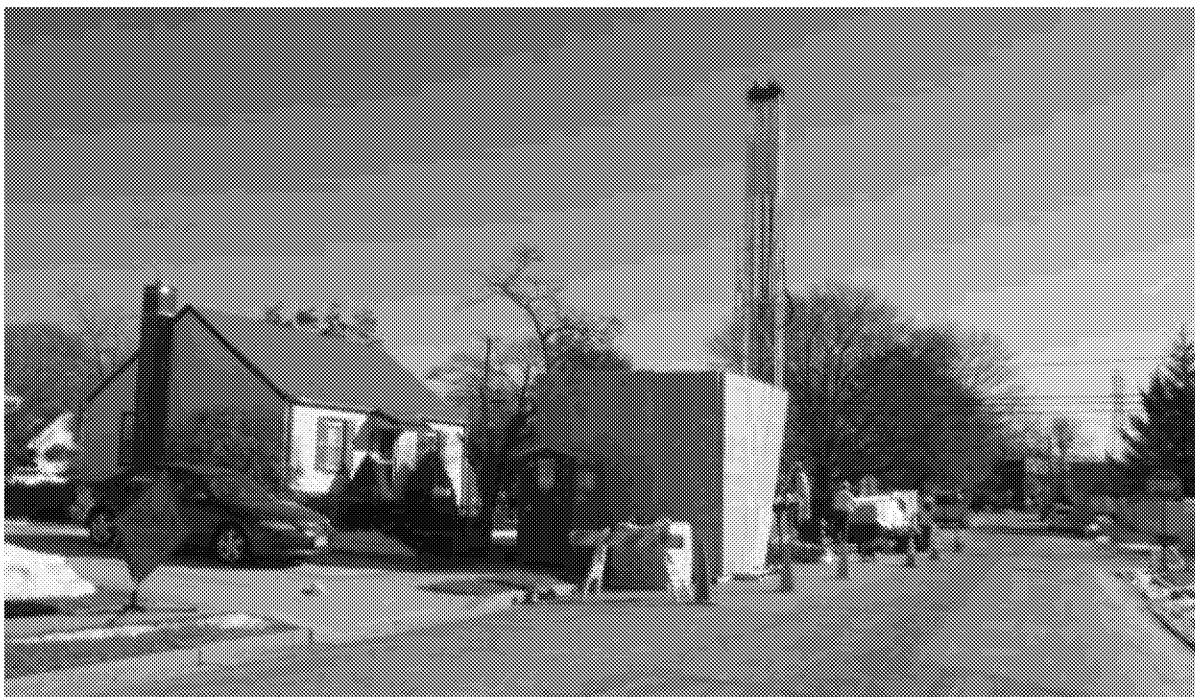
DATE: March 16, 2015

RE: Drilling Program Site Visit – March 12, 2015  
Northrop-Grumman/Navy Bethpage Groundwater  
Bethpage, NY

As a follow-up to our recent meetings with Northrop-Grumman at EPA, I conducted a courtesy field visit on March 12 to observe the current progress of borehole drilling and installation of monitoring wells related to the Northrop-Grumman and Navy groundwater investigations. Two drill rigs are currently in operation, for the VP7 and VP11 locations. I met with Arnas Nemickas from Arcadis, the consultant for Northrop-Grumman at the sites.

1. VP7, located at Emma and Windhorst Streets. Installation of a monitoring well was in progress. Photos of the location are below:





Intersection Emma and Windhorst Streets; Monitoring Well Installation Northrop-Grumman 3/12/15

The weather conditions were clear and cool, and some of the extensive snow cover in the area from the previous month has melted. The rig and support equipment/vehicles were in good condition and the roadways and work area appeared appropriately marked out with traffic cones and warning signs. An air monitoring instrument is visible in the photo above. All workers were wearing hard hats, safety vests, and a HASP was available at the site. Arnas introduced me to the Arcadis geologists conducting the logging and sampling, and also showed me the NYSDEC

Groundwater Hotspot Pre-Design Investigation Fact Sheet which is distributed and available to all residents prior to mobilization. (copy attached) The Fact Sheet provides appropriate contacts for anyone with questions or comments. The Fact Sheet provides email and telephone contacts for NYSDEC, NYSDOH and the NYSDEC Citizen Participation Specialist. A temporary plywood barrier had been installed on the west side of the site. Its purpose was not obvious but helped reduce wind effects from the frigid February temperatures and may have afforded some noise mitigation. The borehole was completed without incident and a suite of geophysical logs was made prior to design and installation of the monitoring well.

2. VP11 located at William and Broadway Streets. Drilling and sampling of the borehole is currently in progress but nearing completion. At the time of the visit, groundwater samples were being collected at the approximate 700 foot depth. Photos of the location and sampling are below:



Intersection William and Broadway Streets, borehole drilling Northrop-Grumman 3/12/2015

The roadways and work area had traffic cones and signs advising of the work. There was sufficient clearance between the rig and nearby utility lines (the photo is a bit misleading from this perspective.) Arnas introduced me to the geologist and we had an informal discussion on the characteristics of the “Raritan Clay” where they were obtaining soil samples via split spoon sampling. They showed me an informal “jar” sample of the material and the geologist appeared to accurately describe it in the logs. A water sample was being collected while I was at the site. Procedures appeared in accordance with the NYSDEC approved SOP, there was a bit of cloudiness in the water sample being collected, but it was consistent with the suspended material shown in the ‘jar’ sample.



Intersection William and Broadway Streets, borehole drilling Northrop-Grumman 3/12/2015



Water sample collection from VP11 3/12/2015



Water Sample collection detail – filling cap of VOA bottle 3/12/2015

A telephone conversation with Mike Zobel, a geologist with EnSafe, the contractor for Navy, confirmed that the 3 drilling rigs have completed drilling operations of monitoring wells associated with VPB 147 (Crocus Drive and Sheepshead Lane). VPB 147 was completed July 2014 with drilling and sampling to 1030 fbgs. The Data Summary Report for VPB was submitted February 2015.

VPB 158 (46 Gingham Lane) has also been completed with demobilization finalized this week. Mike advised that the third drilling rig has also completed installation of outpost wells associated with prior drilling of VPB 151 (Lawrence Road and Susan Court) and is demobilizing. The Data Summary Report for VPB 151 was submitted February 2015. The “outpost” monitoring wells were installed for “early warning” purposes for South Farmingdale Water District Plant 6 wellfield. VPB 151 was completed September 2014 with drilling and sampling to 990 fbgs.